Remarks

Claims 1, 2, 4 - 9, and 12 - 26 are pending. Favorable reconsideration is respectfully requested.

The present invention is directed to redispersible polymer powder compositions which also contain a setting accelerant for hydraulically settable cement compositions. In order to perform their function as accelerants, the accelerants or their salts must be present in the cement in their free state, that is, they must not be chemically combined with other compounds, otherwise no setting acceleration would take place. This fact is well known to the skilled artisan, and judicial notice may be taken thereof. Thus, for example, diethanolamine is a strong accelerant. However, if diethanolamine is reacted with isocyanate to form urethane groups with both hydroxyl groups, the hydroxylamine groups are no longer present and no setting acceleration takes place.

Redispersible polymer powders have been added to hydraulically settable mixtures such as brick and tile mortar, concrete, portland cement, etc., for years. Addition of these polymers creates a much more flexible product with enhanced properties, such as tensile strength and, depending upon the polymer, water resistance. The increase in physical properties is linked directly to the molecular weight of the polymer; oligomers do not produce significant physical property increases.

In the past, redispersible polymers and setting accelerants were supplied premixed with water, and then added to the dry cement mix. However, upon manufacture, the highly nucleophilic accelerants caused rapid hydrolysis of the polymers, destroying their physical property enhancing effect. Applicants have found that redispersible polymer powders which already contain the accelerant, and are provided in dry form, show significant acceleration without polymer degradation.

Claims 1-9 and 12-26 have been rejected over *Colombet et al.* U.S. 5,922,796. Applicants' attorney apologizes for not discussing *Colombet* in the last Response. *Colombet* was inadvertently overlooked due to the large number of rejections.

Colombet discloses redispersible polymer powders which are stabilized by a mixture of surfactants comprising non-ionic polyoxyalkylene compounds and water soluble polyacid electrolytes. *Colombet* discloses no protective colloids; rather the dispersions of *Columbet* are stabilized by non-ionic surfactants. Thus, for this reason alone, *Colombet* does not teach or suggest the claimed invention, which requires protective colloids. Rather, *Colombet* disparages the prior art polymers which contain protective colloids. *See*, col. 1, ll. 27-31, thus teaching away from the use of protective colloids, and employing surfactants instead.

Moreover, *Colombet* discloses no setting accelerant as claimed. The polyoxyethylated surfactants derived from fatty amines (col. 3, l. 65) do not contain ethanolamine groups. The smallest number of repeating ethoxy groups is 2, and thus the smallest surfactant contains, not ethanolamine groups, but hydroxyethyloxyethylamine groups. The fatty amine surfactants serve to keep the polymer in dispersion as it is formed and to render it later redispersible, and are but one type of many surfactants disclosed by *Colombet* for this purpose.

The *Colombet* compositions also contain, as a necessary ingredient, a soluble polyacid electrolyte, for example polyacrylic acid. As can be seen, the polymers of *Colombet* are completely different from those claimed, and does not render the claimed compositions obvious. Withdrawal of the rejection over *Colombet* is solicited.

Ball teaches crosslinkable powder compositions which require functional groups which react with a crosslinker which may have, for example, amino or hydrazido functionality. The functional groups required in the polymer are aldehyde, keto, epoxy, isocyanate, anhydride, or aziridine. Claim 1 of the present application limits the copolymers to monomers which do not include the reactive functionalities of *Ball*. The purpose of the *Ball* composition is to prepare a polymer which, when exposed to heat, crosslinks to a thermoset polymer. To do so requires the functional polymer and a crosslinker reactive therewith. Applicants do not teach or suggest such compositions, and such compositions are not within the scope of claim 1. Claims 19 and 24 preclude the homo- or copolymers from bearing functional groups which react with the setting accelerants. The Examiner has objected to this language, contending that it is new matter; Applicants disagree. The Examiner also states that since the proviso is a negative proviso, it must have "explicit antecedent basis" in the specification. Applicants' attorney is unaware of any legal requirement for "explicit" antecedent basis. It is well known that limitations in the claims need not be present in identical language in the specification ("*in haec verba*"). This is true whether the limitation is a positive or negative recital. If the Office believes this to be incorrect, citation of the appropriate case law would be appreciated.

The specification makes clear that the composition contains a setting accelerant. An accelerant which has reacted is no longer an accelerant. For example, at page 2, lines 2-3, it is indicated that the large amounts of low molecular weight organic compounds (unreacted accelerants) surprisingly do not adversely affect blocking resistance or flowability. If the polymer had reactive groups, the accelerants would react with the polymer, becoming part thereof, and would no longer be low molecular weight species. At page 3, line 8, it is stated that NR_3 or $R_2N\text{-}(CH_2)_2\text{-}NR_2$ accelerants are present. If reactive groups on the polymer were present, these groups would react, and would no longer be present. The language "are present" indicates that they have not reacted. "Not reacting" requires the absence of reactive groups on the polymer.

The specification included the possibility of employing such reactive groups, but with the understanding of one skilled in the art that these reactive functional group-containing monomers would only be used when the accelerant was not reactive therewith such that it would still be available for its accelerant function. The claims as presently structured omit polymers containing these reactive groups in their entirety, in claim 1 by the term "consisting essentially of", and in claims 19 and 25 by the negative proviso that reactive groups are absent such that the compositions still contain the accelerants in the composition in uncombined form.

This situation, therefore, is the same as presented in *In re Johnson*, 194 USPQ 187 (CCPA 1977), in which the CCPA approved of a negative limitation excluding only those polyethersulfone copolymers with (O-E-O-E') repeating groups from the remaining polyether sulfones. No such negative limitation was present in the specification, either literally or by implication, as noted by the CCPA. However, the CCPA (whose precedent must be followed unless overturned *en banc* by the full Federal Circuit) indicates that such a negative proviso is completely acceptable, and not to allow such would be a "hypertechnical application of legalistic prose relating to that provision of the statute [§ 112]." *Johnson* at 196.

The Board of Patent Appeals and Interferences has also recently addressed this issue in *Ex parte Parks*, 30 USPQ 1234 (BPAI 1993) and indicated that the written description requirement does not require explicit support for later added claim limitations, further explaining that negative limitations or provisos are no different in this respect than positive ones. Explicit support is not required.

Thus, the independent claims which contain the negative limitation do not violate the written description requirement, and at the same time, clearly distinguish over *Ball*, who requires very reactive groups such as epoxide, anhydride, isocyanate, etc., for the purpose of reacting with a crosslinker. Withdrawal of the rejection of the claims over *Ball* is solicited.

Thames is directed to coating and adhesive formulations which contain polymers derived from long chain alkenol monomers such as deca-4-ene-1-o1 as internal plasticizing agents. Such monomers are not disclosed by Applicants nor is their use contemplated. The term "consisting essentially of" in claim 1 in fact excludes such compounds.

The only teaching of triethanolamine in *Thames* is for use in adjusting pH of the polymerized mixture, and no examples of its use are given, nor any amounts. Each of claims 1, 19, and 25, all the independent claims, require the accelerant to be present in the dry composition in an amount of 0.1 to 25 weight percent. *Thames* is not directed to modifying hydraulically settable cementitious formulations by adding an accelerator, and in fact does not mention concrete, mortar, cement, etc., at all. One skilled in the art would not look to *Thames* for any teachings in this regard, and even had one stumbled upon *Thames* by accident, its teachings would not motivate the skilled artisan to do what Applicants have done. Withdrawal of the rejection over *Thames* is solicited.

Pakusch is directed to improving the spray drying of redispersible polymer powders by including as a drying assistant, a phenolsulfonic acid/formaldehyde polymer, or a salt thereof. Claim 1 has been amended to include the recitations of former claims 2 and 3. The latter claim requires the salt to be one of an inorganic or organic acid. Phenolsulfonic acid/formaldehyde condensates have never been viewed by those skilled in the art as organic acids. Rather, they are condensation polymers. The claims now patentably distinguish over *Pakusch*. Furthermore, while *Pakusch* discloses triethanolamine among a variety of basic substances to neutralize the phenolsulfonic acid/formaldehyde condensation polymer, he never employed triethanolamine, nor did he teach or suggest that the amount of triethanolamine be selected so as to provide 0.1 to 25 weight percent of the latter. Withdrawal of the rejection over *Pakusch* is solicited.

It is noted that claims 15, 17, 22, and 23 require the accelerant to be in the form of an acetic acid or formic acid salt, neither of which are disclosed, taught, nor suggested by *Pakusch*. *Pakusch* is not directed to accelerating setting of cementitious compositions, but rather to facilitating spray drying. There is no indication that any of his compositions would have any accelerant effect, and one skilled in the art would not be motivated by *Pakusch* to arrive at Applicants' claimed invention. Withdrawal of the rejection over *Pakusch* is solicited.

Dreher discloses crosslinkable compositions wherein a long chain alkanolamine is added to a composition which includes an insoluble polymer binder (A1), and a crosslinking composition of an alkenol amine in combination with acid-functional water soluble polymer (A2). The resulting composition may be spray dried and used as a binder for natural products by spraying or otherwise incorporating the composition into the particles to be bound, followed by heating at elevated temperature where the hydroxyl groups of the long chain alkanolamine and the carboxylic acid groups of the water soluble polymer react by esterification, crosslinking the polymer.

Applicants have amended claim 1 to include the limitations of claim 2, and thus the accelerants of the claims are distinguished from the long chain alkanol amines of *Dreher*. *Dreher* does not teach or suggest the presently claimed compounds, nor is *Dreher* addressed to accelerating the setting of cementitious compositions.

The *Dreher* compositions are very different from those of Applicants, which do not contain water soluble carboxylic acid-functional polymers. This is especially noted in claim 1, wherein the polymers present are redispersible polymer powders (which can be formed only from dispersions of insoluble polymers, as is well known) which are further limited by the "consisting essentially of" transitional phrase to those base monomers present, the use of which, in each case, forms an insoluble polymer, not a soluble one.

Dreher is not related to the field of accelerating cementitious compositions nor to modifying such compositions by incorporation of redispersible polymer powders. Rather, *Dreher* is directed to use of his compositions as a binder itself, i.e. for wood particles, sand, etc. One skilled in the art of modifying hydraulically settable cementitious compositions would not look to *Dreher*, particularly as his compositions must be heated strongly to effect crosslinking, something which cannot be done when curing cement. Withdrawal of the rejection over *Dreher* is solicited.

It is further noted that none of the prior art discloses the incorporation of 0.1 to 25 weight percent (or 1 to 10% in dependent claims) of a cement accelerator in a dry redispersible polymer powder composition, nor are these amounts merely an "optimal amount," because the prior art cited is not directed to accelerating cement curing, and there would be no motivation to discover an optimum of something which is not a known result-effective variable, and in fact is not even mentioned by a single reference.

Claim 4 requires the redispersible powder to be one of the enumerated homo- or copolymers, also of course, containing the accelerant. The prior art clearly does not disclose, teach, or suggest such polymer/accelerant compositions. See also claims 12, 18 (which has been amended to avoid duplication of claim 4), and claim 21.

Claims 8 and 9 further require a hydraulically settable binder. The added limitations of these claims have not been addressed relative to the references cited.

Claims 14, 24, and 26 are limited to specific accelerants, and yet rejections have been made of these claims over references which do not disclose, teach, or suggest these compounds for any purpose.

Claims 15, 17, 22, and 23 require specifically that the accelerant salts be salts of formic acid or acetic acid. Yet these claims have been rejected over references which do not disclose, teach, or suggest use of these acids for any purpose.

Entry of the Amendment is respectfully solicited. The amendments to claims 1, 19, and 25 are believed to render these claims patentable. No new issues are raised by the amendments, since the limitations in question were already the subject matter of dependent claims. Note that claim 17 has been amended to recite "powder composition" rather than "process", since claim 1 is a process claim, and claim 18 has been amended to be dependent upon claim 25 to avoid redundancy with claim 4.

Respectfully submitted,

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